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Confidential/Interagency Deliberative Process/Do Cite or Quote

Memorandum

Date: July 16, 2015

Subject: Pilgrim Nuclear Power Plant

To: Greg Casto, Chief
Division of Safety Systems/Balance of Plant
United States Nuclear Regulatory Commission

From: Damien Houlihan, Chief
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This memorandum discusses the NPDES permitting process, opportunities for NRC to weigh in on “conflict” with nuclear safety considerations, and specific questions we have with regard to some of Pilgrim’s claims related how the installation of certain technologies raise safety concerns.

This is part of our ongoing consultation process with regard to renewing the NPDES permit for Pilgrim Station and selecting the Best Technology Available pursuant to section 316(b) of the Clean Water Act.

We look forward discussing this memo with you in the near future.

I. NPDES Permit Process and Opportunities for NRC comment

The following is an outline of the NPDES permitting process from draft to finalizing, including any potential litigation (appeals).

Relevant documents are prepared and discussed internally (draft permit, fact sheet, attachments, and any other determination documents), portions of which are potentially shared/discussed with MassDEP. EPA uses a variety of sources and tools to collect relevant permitting information, including using its authority pursuant to section 308 of the Clean Water Act, 33 U.S.C. § 1318(a), to compel owners and/or operators of permitted sources to provide requested information. It is possible that EPA will seek consultation/input from other resource agencies (*e.g.*, MassWildlife, NOAA, etc) at this development stage. NRC input on potential “conflicts with NRC safety requirement (per 40 C.F.R. § 125.94(f) of the 316(b) rule)” of the draft BTA determination would be welcome at this point and would be the most effective way to determine whether various potential technologies are “available” for Pilgrim Nuclear Power Station (PNPS).

NRC can be provided with the BTA portion of draft documents at this stage in order to provide guidance/direction on whether certain prospective technologies are feasible or not based on nuclear safety concerns. At this point, any NRC guidance on how to structure BTA components to be amenable to Pilgrim in requesting NRC license modification or 10 CFR 50.59 changes, as necessary, would be welcome.

After internal review and discussion is completed (or nearing completion) the draft permit and associated documents are shared with MassDEP for their complete review and comment. During this time, selected portions of the draft permit or fact sheet may be shared with the permittee to ensure that certain factual elements are accurate. Note that this is not an opportunity for the permittee to provide substantive comment on the draft documents, rather, it is an opportunity for the permittee to correct any basic information (e.g., facility description, contact information, etc.) that may be incorrect.

After EPA and MassDEP (and any other) comments and edits are made, the draft permit and related documents are finalized for public comment. The process of developing a draft permit for public comment for a facility of similar complexity to PNPS takes several years. Typically there is a short advanced notice to congressional offices, other affected agencies, and the permittee regarding the anticipated date of public notice.

EPA is required to “public notice” the comment period in a local newspaper, and we have a standard distribution list for interested parties on all public notices. *See* 40 C.F.R. § 124.10. The mandatory comment period is 30 days, but the comment period may be extended for additional time based on the degree of public interest anticipated, the complexity of the draft permit, and other relevant factors. The length of an extended comment period is up to the discretion of the Division Director – in the case of PNPS, it is likely that EPA will have an extended comment period (several months) due to the complexity of the permit. EPA is also required to hold a public hearing when there is a significant degree of public interest in a draft permit, which will almost certainly be the case for the PNPS NPDES permit. *See* 40 C.F.R. § 124.12. At such a hearing, EPA staff would briefly summarize the draft permit and the public would have an opportunity to provide oral and written comments on the draft to EPA and MassDEP. Following the initial public comment (possibly extended) period, EPA is authorized to hold a second public comment period, in which EPA may solicit comments on comments received, or on substantial permit changes made by EPA in response to comments received, during the initial comment period. *See* 40 C.F.R. § 124.14. This process is rarely used, but is possible. EPA also conducts appropriate consultation with the National Oceanographic and Atmospheric Administration (NOAA) and the United States Fish and Wildlife Service (USFWS), where necessary, for Essential Fish Habitat and/or Endangered Species Act concerns either prior to or during the public comment period.

During the comment period, NRC, the permittee, State and Federal Agencies and any other interested party can provide comments on any part of the draft permit, fact sheet, and related documents. At this stage, NRC could provide detailed comments on the selection of BTA, including, in particular, the basis for eliminating selected technologies representing nuclear safety concerns and/or the potential regulatory pathways (e.g., 10 C.F.R. § 50.59 process) to authorize such changes to be implemented under the facility’s existing NRC license. NRC could also make recommendations of alternative approaches to BTA, or could initiate conversation with PNPS that would encourage PNPS to prepare the necessary documentation to implement the required changes at the facility.

After the end of the comment period, EPA and MassDEP would generally issue a final permit, which must include a response to all significant comments and a full account of any changes to permit

conditions between the draft and final permits and the reasons for these changes. *See* 40 C.F.R. § 124.17. Responding to the comments on a draft permit such as Pilgrim is likely to take well over 1 year. Alternatively, as described above, EPA may re-public notice a second draft permit if substantial changes made as a result of new information received within the comment period warrant the additional public comment period. Any re-noticing of a draft permit would delay the issuance of a final permit, often by six months or more, to allow EPA to consider and respond to additional comments.

Once the permit is finalized (signed by the Division Director), there is an opportunity for the permittee or any commenter to appeal one or more conditions of the final permit by filing a Petition for Review with the EPA Environmental Appeals Board (EAB) within 30 days. The EAB, an impartial, independent body within EPA, is the final agency decision maker on administrative appeals of NPDES permits and generally sits in panels of three judges. Filing an appeal with the EAB is a prerequisite to seeking judicial review of a final NPDES permit. *See generally* 40 C.F.R. § 124.19 (describing the EAB appeals process). If such an appeal is made, any appealed condition(s) (and any other conditions that are not severable from the appealed condition(s)) is stayed until resolution of the appeal. *See* 40 C.F.R. § 124.16. The appeal may be resolved either through negotiation with the petitioner, or by ruling from the EAB (including remand back to the Region if warranted). A remand could require re-public notice of the permit for comment. It's difficult to predict the length of litigation before the EAB, but given the complexity of a permit such as Pilgrim, a timeframe of one year or more is not unreasonable.

Once all litigation at the EAB is exhausted, the final permit becomes effective. At this time, a petitioner may seek judicial review within 120 days in the U.S. Circuit Court of Appeals, which for EPA Region 1 NPDES permits is generally the First Circuit. *See* 33 U.S.C. § 1369(b). Even if litigation is initiated, the permit would most likely become effective. Once appeals are exhausted at the First Circuit, it is possible to bring a law suit to the U.S. Supreme Court. This litigation process could take several years.

Given that, as demonstrated above, developing a final permit for a facility such as Pilgrim takes many years, it would not be ideal for NRC to wait for final permit issuance to provide input on whether the selected BTA poses a "conflict with a safety requirement established by" the NRC. Therefore, EPA has initiated its consultation prior to public notice of the draft permit with the hope of getting NRC feedback on potential conflicts from implementing available technologies as early in the process as possible.

The following sections outline several issues raised by PNPS that relate to potential nuclear safety conflicts related to implementation of 316(b) technologies. EPA requests that NRC review the issues summarized below and provide any feedback to EPA to support or contradict the following potential nuclear safety conflicts as identified by the permittee.

II. Potential Nuclear Safety Conflicts at PNPS as Identified by Entergy

A. Closed Cycle Cooling (CCC)

Entergy evaluated the availability of closed-cycle cooling to reduce cooling water intake and discharge volumes at PNPS using a PEPSE model. According to Entergy, the limiting parameters for operation of a closed-cycle system at PNPS are the steam turbine backpressure and hotwell temperature. In its analysis, Entergy assumed a continuous operational hotwell temperature limit of 118°F to provide an allowance against the required administrative hotwell average temperature limit of 120°F. The steam turbine backpressure is 4 in-Hg. In the simulation, the hotwell temperature is the bounding limit.

Based on the use of modeling to calculate the effects of a closed-loop configuration on operations at PNPS under the Station's existing operational guidelines and standards, Entergy concludes that converting PNPS to closed-loop cooling is technologically infeasible because it is inconsistent with the licensed operation of PNPS's approved condenser/turbine configuration. In particular, Entergy maintains that, with closed-cycle cooling, the Station's net thermal load would have to be reduced to less than 80% for at least 242 calendar days a year. The facility is required to insert control rods at less than 80% net thermal power, and as such, this value presents a threshold beyond which nuclear safety concerns would render the Station completely inoperable and would result in a shutdown of the facility.

Questions on availability of CCC at PNPS:

What specific technical specification in the plant's existing NRC license limits the hotwell and turbine backpressure at the administrative limits cited by Entergy? Is there any scenario, including under the plant's existing license or via a modification to that license, in which PNPS could operate at a higher hotwell temperature or turbine backpressure? If so, what is the maximum hotwell temperature and turbine backpressure that could be authorized by the NRC, and how would such an authorization come about? Can NRC confirm that the Station would be forced to shutdown during any period when the risk of operating at less than 80% net thermal power for more than one hour occurs? Finally, Entergy's evaluation of closed-cycle cooling assumes the Station is limited to the existing condenser because, according to Entergy, replacing the condenser is not feasible due to its location inside the turbine building. Can NRC confirm that replacing the main condenser is not feasible at Pilgrim Station or, as the permittee suggests, has never been undertaken at any nuclear facility?

B. Passive Intake Screening Systems

Entergy also evaluated the potential use of passive screening systems, either at the existing cooling water intake structure (CWIS) or at a new, offshore location, to reduce the impingement and entrainment of aquatic organisms at PNPS. According to Entergy, the importance of uninterrupted cooling water flow to nuclear operations imposes restrictions on the use of screening and barrier technologies, and, to a lesser extent, mechanical flow reductions. In particular, Entergy references the Institute of Nuclear Power Operations (INPO) requirements on "Intake Cooling Water Blockage" that do not allow the use of screen systems that may compromise the requisite flows to an ultimate heat sink or otherwise impair water-based nuclear safety systems. Entergy also mentions that it is currently preparing a response to a 2007 INPO "Significant Operating Experience Report" that requires evaluation of and implementation of measures to address factors that could lead to cooling water blockage.

Questions on availability of Screening Systems at PNPS:

Passive screening systems designed to block the entrainment of marine organisms are potential BTA technologies (for example, offshore wedgewire screens). However, any such screening technology has the potential for fouling (i.e., blockage) in the marine environment. As part of the requirements for Best Technology Available at PNPS, EPA could include a requirement to maintain operational control of the existing CWIS as an emergency backup cooling water intake system (in the event of blockage of a new passive screening system). Would such an emergency backup system be sufficient to address any potential conflict with nuclear safety posed by the blockage of the cooling water?

Can NRC provide more information on the performance objectives, criteria, and guidelines for plant operations and safety related to cooling water blockage as set by the INPO or the NRC, either generally

or specific to PNPS? What is the status of PNPS's "Significant Operating Experience Report" responsive to the 2007 request from the INPO?